

AMENDMENTS TO THE CLAIMS:

Please amend the claims to read as indicated herein.

1. (currently amended) A method of managing a network, ~~especially an optical network, that~~ includesing a plurality of nodes ~~which that~~ are interconnected in an arbitrary topology so as to be capable of carrying traffic between ~~selected said~~ plurality of nodes, the method comprising the steps of:

1.1 ~~providing~~ a supervisory network by means of supervisory channels between the nodes of said plurality of nodes;

1.2 ~~providing~~ a node manager which is ~~comprised of~~ one or more software modules in each one of said plurality of nodes;

1.3 ~~establishing of~~ supervisory connections over one or more of the supervisory channels between selected nodes of said plurality of nodes through which the node manager communicates with other node managers in other nodes of said plurality of nodes;

1.4 ~~providing~~ a node module in each node manager that provides an interface to ~~the~~ hardware settings of each of the respective said plurality of nodes that is associated with the node module;

1.5 ~~providing~~ a master module in at least one node manager;

1.6 ~~establishing of~~ supervisory connections over one or more supervisory channels between the selected nodes of said plurality of nodes, said supervisory connections providing communication through which between the master module ~~communicates with and~~ the node modules; and

1.7 ~~performing~~ a function selected from the group consisting of amending hardware settings in the selected nodes, and/or monitoring of hardware settings in the selected nodes, and a combination thereof, in selected nodes with the respective

node module of each of the selected nodes~~+~~,

~~1.8-wherein~~ controlling ~~of~~ the amendments carried out by the node modules and/or processing ~~of~~ the monitored hardware settings is carried out by the master module.

2. (currently amended) The method of managing a network according to claim 1, comprising the further steps of:

~~2.1-providing~~ a master module in ~~several or all~~each of at least two node managers, ~~whereby~~wherein each master module is ~~either in a state selected from the group consisting of an active state~~ and a passive state; and

~~2.2-setting of a single~~first of the at least two master modules to the active state and maintaining or setting ~~of~~ the other of the at least two master modules to the passive state~~+~~, ~~whereby~~

~~2.3-wherein~~ controlling ~~of~~ the amendments carried out by the node modules and/or processing ~~of~~ the monitored hardware settings is carried out only by the first master module~~that is in the active state.~~

3. (currently amended) The method of managing a network according to claim 2, ~~whereby~~wherein the setting of the state of the ~~several~~at least two master modules is done automatically.

4. (currently amended) The method of managing a network according to claim 3, further comprising the ~~further~~ steps of:

~~4.1-periodically~~ generating heartbeat messages in each node of said plurality of nodes and exchanging these messages among all of said plurality of nodes, ~~whereby~~wherein each heartbeat message contains information about the state of the master module of ~~the~~a respective node of said plurality of nodes; and

~~4.2-processing of~~ the received heartbeat message in each

node of said plurality of nodes and setting ~~of~~ the state of the master module in the respective node depending on ~~the~~ information in the received messages, ~~such~~^{so} that ~~always~~ a single master module of all of said plurality of nodes is always in the active state.

5. (currently amended) The method of managing a network according to claim 4, further comprising the ~~further~~ step of providing ~~of~~ each master module with an initial passive state when the node manager of the respective node of said plurality of nodes is initialized, and ~~whereby the~~^{wherein} changing ~~of~~ the state of the master module in the respective node of said plurality of nodes is made according to ~~one of the following~~ a decision selected from the group consisting of:

~~5.1~~ if the master module of the respective node of said plurality of nodes is in the passive state and the respective node of said plurality of nodes receives at least one heartbeat message that contains information about a master module of another node of said plurality of nodes being in the active state, the master module of the respective node of said plurality of nodes remains in the passive state; and

~~5.2~~ if the master module of the respective node of said plurality of nodes is in the passive state and the respective node of said plurality of nodes receives no heartbeat message that contains information about a master module of another node of said plurality of nodes being in the active state within a predetermined time interval, the master module of the respective node of said plurality of nodes changes into the active state.

6. (currently amended) The method of managing a network according to claim 4 ~~or claim 5~~, ~~whereby~~^{wherein} each heartbeat message generated in each node of said plurality of nodes

further contains ~~the~~a node ID of the respective node of said plurality of nodes in which the message is generated, and wherein changing of the state of the master module in the respective node of said plurality of nodes is made according to ~~one of the following a~~ decisions selected from the group consisting of:

6.1-if the master module of the respective node of said plurality of nodes is in the passive state and the respective node of said plurality of nodes receives at least one heartbeat message that contains information about a master module of another node of said plurality of nodes being in the active state, the master module of the respective node of said plurality of nodes remains in the passive state;

6.2-if the master module of the respective node of said plurality of nodes is in the passive state and the respective node of said plurality of nodes receives no heartbeat message that contains information about a master module of another of said plurality of nodes being in the active state within a predetermined time, the respective node of said plurality of nodes compares ~~its~~the node ID with other received node IDs using a predetermined procedure, and depending on the result of this procedure, especially if ~~its~~the node ID is smaller than the other received node IDs, the master module of the respective node of said plurality of nodes changes into the active state;

6.3-if the master module of the respective node of said plurality of nodes is in the active state and the node receives no heartbeat message that contains information about a master module of another of said plurality of nodes being in the active state within a predetermined time, the master module of the respective node of said plurality of nodes remains in the active state;

6.4-if the master module of the respective node of said

plurality of nodes is in the active state and the respective node of said plurality of nodes receives at least one heartbeat message that contains information about a master module of another of said plurality of nodes being in the active state, the respective node of said plurality of nodes compares ~~itsthe~~ node ID of the node of said plurality of nodes with other received node IDs using a predetermined procedure and depending on the result of this procedure, especially if ~~itsthe~~ node ID is not smaller than the other received node IDs, the master module of the respective node of said plurality of nodes changes into the passive state.

7. (currently amended) The method of managing a network according to ~~one of claims 1 to 6~~, comprising the further steps of:

~~7.1 communicating between~~ the node module in each node of said plurality of nodes ~~communicates with~~ and the master module ~~either through a set of supervisory connections selected from the group consisting of a full set of supervisory connections~~ and a reduced set of supervisory connections, ~~whereby,~~

~~7.2 wherein~~ in the full set of supervisory connections, each node module communicates with all of the master modules present in one or more nodes of said plurality of nodes, especially whether in the active state or passive state, and

~~7.3 wherein~~ in the reduced set of supervisory connections, each node module communicates only with a single master module present in one of said plurality of nodes, ~~or especially with a single master module in an active state present in one node.~~

8. (currently amended) The method of managing a network according to ~~one of claims 4 to 7~~, comprising the further steps of:

~~8.1~~ providing a master controller module in each node of said plurality of nodes which is connected to the master module of the respective node~~7~~1.

~~8.2~~ ~~the~~wherein master controller modules of different nodes of said plurality of nodes generate, exchange and process the heartbeat messages and control the state of the master module of the respective node.

9. (currently amended) The method of managing a network according to claim 8, ~~whereby~~wherein the node module in each node of said plurality of nodes communicates only with the master module in the active state~~1~~, and in the case of changing the state of the master module to the active state and a further master module to the passive state~~1~~, the supervisory connections through which the communication takes place are reconfigured.

10. (currently amended) The method of managing a network according to claim 9, ~~whereby~~wherein the master controller module of the node of said plurality of nodes ~~with~~having the further master module that has been changed to the active state sends a reconfigure message to each node of the plurality of nodes that contains ~~ing~~ the node ID of ~~its~~ the node of said plurality of nodes having the further master module.

11. (currently amended) The method of managing a network according to ~~one of claims 2 to 10~~, comprising the further steps of:

~~11.1~~ providing a database containing information relating to a hardware state of each node of said plurality of nodes ~~as well as~~and local and global network management activities in each node of said plurality of nodes;

~~11.2~~ synchronizing ~~of~~ the database in each node of said

plurality of nodes according to the following steps:

~~11.3~~ before ~~a~~ the first master module is set to the active state, ~~the corresponding~~ a first node of said plurality of nodes, that is associated with the first master module and includes a current state of the database, ~~especially the master controller module of the corresponding node~~, sends the current state of the database ~~of the corresponding node~~ to all other nodes of said plurality of nodes, ~~especially the master controller of all other nodes~~;

~~11.4~~ the receiving nodes of said plurality of nodes that receive the current state of the database, ~~especially the master controller modules of the receiving nodes~~, synchronize ~~it~~ the database in each receiving node with the ~~received~~ current state of the database.

12. (currently amended) The method of managing a network according to claim 11, comprising the further steps of:

~~12.1~~ the master module in each receiving node of said plurality of nodes informs ~~the~~ a master controller in ~~the corresponding each receiving node of said plurality of nodes~~ of any changes in the database of the receiving node of said plurality of nodes;

~~12.2~~ the master controller sends ~~these~~ the changes in the database of the receiving node of the plurality of nodes to all other master controllers in all other nodes of the plurality of nodes;

~~12.3~~ when ~~a~~ one of the plurality of nodes comes up after a failure the master controller in ~~that~~ the one of the plurality of nodes that comes up after a failure requests ~~for~~ the current state of the database from the master controller of the first node of said plurality of nodes ~~with the master module in the active state~~ to synchronize ~~it~~ the database of the one node that

comes up after a failure with the database of the first node of said plurality of nodes ~~with the master module in the active state.~~

13. (currently amended) A network management system of a network including a plurality of nodes which are interconnected in an arbitrary topology so as to be capable of carrying traffic between ~~selected~~ said plurality of nodes, ~~whereby~~ comprising:

~~13.1 the nodes are interconnected by~~ a supervisory network interconnecting the plurality of nodes, that is provided by supervisory channels between the plurality of nodes;

~~13.2 each node has a~~ node manager associated with each one of said plurality of nodes ~~which~~ that communicates with other node managers through a supervisory connection established over one or more supervisory channels between selected nodes of said plurality of nodes;

~~13.3 each node manager includes a~~ node module associated with each node manager ~~which~~ that provides an interface to the hardware of ~~this~~ the node of said plurality of nodes that is associated with the node module ~~which~~ and allows for amending and monitoring of amendments of ~~the~~ hardware settings of ~~this~~ the node of said plurality of nodes that is associated with the node module; and

~~13.4 at least one node manager includes a~~ master module associated with at least one node manager ~~which~~ that is connected to the various node modules through the supervisory connections established over the one or more supervisory channels between selected nodes~~;~~

~~13.5 wherein~~ the master module provides functionality for controlling ~~of~~ the node modules and ~~the~~ amending ~~of~~ the hardware settings and for processing ~~of~~ the hardware settings monitored by the node modules.

14. (currently amended) The network management system according to claim 13, ~~whereby the master module includes~~further comprising an interface associated with the master module to support one or more Graphical User Interfaces located in one or more nodes of the plurality of nodes.

15. (currently amended) The network management system according to claim 13 ~~or 14, whereby the master module includes~~further comprising one or more software modules included in the master module for global and local network management ~~and especially one or more software modules for database related tasks and features for a database containing information relating to hardware state of each node as well as local and global network management activities in each node.~~

16. (currently amended) The network management system according to ~~one of claims 13 to 15, whereby~~wherein ~~several or each~~at least one node manager has ~~a~~the master module~~+~~, and

~~16.1 wherein~~ each master module ~~could~~can be set to ~~the~~a passive state or to ~~the~~an active state, ~~whereby~~wherein only in the active state the ~~respective~~ master module has the said functionality for controlling the node modules and amending the hardware settings and for processing the hardware settings monitored by the node modules, ~~whereas~~and wherein in the passive state ~~it~~the master module ~~mainly~~ has ~~the~~ functionality ~~of~~for performing database synchronization.

17. (currently amended) The network management system according to claim 16, ~~whereby~~further comprising a master controller module associated with each node of said plurality of nodes ~~further comprises a master controller module for setting~~

~~of the state of the respective master module.~~

18. (currently amended) ~~The~~A network management system of a network including a plurality of nodes which are interconnected in an arbitrary topology so as to be capable of carrying traffic between selected nodes, comprising:

a supervisory network interconnecting the plurality of nodes, that is provided by supervisory channels between the plurality of nodes;

a node manager associated with each one of said plurality of nodes that communicates with other node managers through a supervisory connection established over one or more supervisory channels between the selected nodes of said plurality of nodes;

a node module associated with each node manager that provides an interface to the hardware of the node of said plurality of nodes that is associated with the node module and allows for amending and monitoring of amendments of hardware settings of the node of said plurality of nodes that is associated with the node module; and

a master module associated with at least one node manager that is connected to the various node modules through the supervisory connections established over the one or more supervisory channels between selected nodes,

wherein the master module provides functionality for controlling the node modules and amending the hardware settings and for processing the hardware settings monitored by the node modules, and ~~according to one of claims 13 to 17,~~

whereby~~wherein~~ the network management system is managed by a method according to ~~one of claims 1 to 12.~~

Please add the following claims, newly numbered as claims 19 and 20.

19. (new) The method of managing a network according to claim 7, wherein each node module communicates only with a single master module in an active state present in one node in the reduced set of supervisory connections.

20. (new) The network management system according to claim 15, further comprising one or more software modules in the master module for database related tasks and features for a database containing information relating to a hardware state of each node and local and global network management activities in each node.